

Media Type - Mac Conkey agar

Mac Conkey is a differential media containing all the necessary components to selectively support Gram negative bacterial species.

Primary use: MacConkey agar is used for the isolation non-fastidious Gram-negative or coliforms, in addition to differentiating their lactose fermentation abilities.

Technical characteristics:

The typical medium composition:

Typical formulation:	g/ltr
Peptone	20
Lactose	10
Bile salts	5
Sodium chloride	5
Neutral red	0.075
Agar	12

Neutral red is red in colour at pH below 6.8

Fresh pH 7.4 ± 0.2

Applications: A differential medium for the isolation of coliforms and intestinal pathogens in water, dairy products and biological specimens. The inclusion of bile salts prevents the growth of Gram positive bacteria. Fermentation of lactose in the media will result a change in pH which is detected by neutral red.

Absorption of neutral red throughout growth will result in formation of red or pink colonies as a result of acid production by lactose fermenters. Strong lactose fermenting bacteria can cause bile salt precipitation which results in a pink halo in the medium surrounding the individual colonies or areas of confluent growth. Non-lactose fermenting bacteria will appear as off-white opaque colonies.

In water testing, the medium can be used direct count of coli-aerogenes bacteria and it has the added advantage of inhibiting swarming of *Proteus*.

Appearance: The prepared media is slightly opalescent, pinkish-red.

Regulatory reference: USP<62> Microbiological Examination of Nonsterile Products:
Test for Specified Microorganisms Table 1

Test for <i>Escherichia coli</i>		
Test/Medium	Property	Test Strains
MacConkey Agar	Growth promoting + indicative	<i>E. coli</i>

Organisms and morphology: The media allows the development of different coloured colonies to distinguish isolated bacteria which can ferment lactose compared to non-lactose fermenting bacteria. The colonial morphology provides a presumptive identity of the isolated bacteria and it will be necessary to conduct further identification test for confirmation.

Microorganism	Colour	Observational appearance
<i>Escherichia coli</i>	red	non-mucoid
<i>Aerobacter aerogenes</i>	pink	mucoid
<i>Enterococcus species</i>	red	minute, round
<i>Staphylococcus species</i>	pale pink	opaque
<i>Pseudomonas aeruginosa</i>	green-brown	fluorescent growth

Typical incubation parameters: Mac Conkey agar is incubated at 30 – 35 °C for 18 to 72 hours when subculturing *E. coli* as recommended in the Pharmacopoeia guidance for “Testing of products – Bile-Tolerant Gram Negative Bacteria – *Escherichia coli*”

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